

291
3.5
HW
Key

p142 1/2, 16, 17, 19, 20

12. $2x - y = 2$

$3z = 21 \rightarrow 3z = 21$

$4x + z = 19$

$z = 7$

$4x + 7 = 19$

$4x = 12$

$x = 3$

$2(3) - y = 2$

$-y = -4$

$y = 4$

$(3, 4, 7)$

16. $4a + 2b - 6c = 2$ ①

$6a + 3b - 9c = 3$ ②

$8a + 4b - 12c = 6$ ③

$-8a - 4b + 12c = -4$

① $\times -2 +$ ③

$0 \neq 2$ False

\emptyset

17. $2r + 5 + t = 14$ ①

$-r - 3s + 2t = -2$ ②

$4r - 6s + 3t = -5$ ③

① $\times 3 +$ ②

$6r + 3s + 3t = 42$

$-r - 3s + 2t = -2$

① $\times 6 +$ ③

$5r + 5t = 40$

$12r + 6s + 6t = 84$

simplify \rightarrow

$r + t = 8$

$4r - 6s + 3t = 5$

$\times 9$

$16r + 9t = 79$

$-9r - 9s = -72$

$-7r = 9$

$r = 1$

$t = 7$

$s = 5$

$(1, 5, 7)$

$$19. \quad 4a - 2b + 8c = 30 \quad (1)$$

$$a + 2b - 7c = -12 \quad (2)$$

$$2a - b + 4c = 15 \quad (3)$$

Add (1) + (2)

↓

$$5a + c = 18$$

then (3) $\times 2 + (2)$

$$a + 2b - 7c = -12$$

$$4a - 2b + 8c = 30$$

$$5a + c = 18$$

same equation

∞ number of solutions

$$20. \quad 2r + s + t = 7 \quad (1)$$

$$r + 2s + t = 8 \quad (2)$$

$$r + s + 2t = 11 \quad (3)$$

$$(3) + (2) \times -2$$

$$r + s + 2t = 11$$

$$-2r - 4s - 2t = -16$$

$$-r - 3s = -5$$

$$(1) + -1 \times (2)$$

$$2r + s + t = 7$$

$$-r - 2s - t = -8$$

$$r - s = -1$$

$$r - s = -1$$

$$-r - 3s = -5$$

$$-4s = -6$$

$$s = \frac{-6}{-4} = \frac{3}{2}$$

$$r - \frac{3}{2} = -1$$

$$r = \frac{1}{2}$$

$$2\left(\frac{1}{2}\right) + \frac{3}{2} + t = 7$$

$$2\left(\frac{1}{2}\right) + t = 7$$

$$t = 4\frac{1}{2}$$

r, s, t

$$\left(\frac{1}{2}, \frac{3}{2}, \frac{9}{2}\right)$$